downe certaine groundes and pillers thereof, the which if any can abſolutely diſproue, then may he well ſay that it is a fallible rule and not true: the which I knowe none can diſproue except he will denie both reaſon and learning. And the groundes are theſe, *viz.*

1 *God in the beginning created all thinges in number, waight and meaſure, in order, place, and forme, and appointed man to haue dominion ouer his creatures, and to ſearch and ſeeke out the ſecreet and hidden vertues in them conteyned, giuen vnto them by by God their creator, ſeuerally, by meaſure, &c.* Geneſis.

2 *God created two lights, a greater light to rule the daie, as the Sunne, and a leſſe to rule the night, as the Moone and the Starres.* Geneſis.

3 *God placed the Starres in the firmament of Heauen, to giue light vpon the Earth.* Geneſis.

4 *The firſt mouer doth giue a turne once euery 24. howers or there abouts, about the Earth, whereby the Sunne, the Moone, and Starres, are carried from the East vnto the West, and ſo about.* Ptolomie. Ariſtotle. Thom. de ſacrob.

5 *The Earth is quiet and vnmoueable, and is accounted the Center of the worlde.* * Ptolomie in Almegeſto. Ariſt. in 2. met. Thom. de ſacrob.

6 *Doe not the Earth and the Waters make one rounde bodie.* Thom. de ſacrob.

7 *There are two poles, the Arcticke and Antarcticke, the one in the North, the other in the South, and the Line Equinoctiall in the middeſt.* Ptolomie. Ariſtotle. Alphonſus.

8 *There is a Latitude, which is taken from the Equinoctiall to the Poales, either to the South or the North.*

9 *There is no Latitude without his Longitude.*

10 *The Latitude is oppoſite to the Longitude, in reſpect that the Latitude is taken from the South to the North. And the Longitude from the West vnto the East.* Ptolomie.

11 *The Sunne doth riſe and fall in his courſe, and neuer continue at one ſtaie.*

THE GROVNDES OF the Longitude:

With an Admonition to all thoſe that are Incredulous and be-*leeue not the Trueth of* the ſame.

VVritten by Simon Forman, *ſtudent in* Aſtronomie and Phiſique.

1591.

Nihil Impoſſibile Deo
Nil tam difficile quod non ſolertia vincat
Veritas filia Temporis.

Imprinted at London by Thomas Dawſon. 1591.

BODLEIANA BIBLIOTHECA

TO all true ſtudents of *Geography* and *Coſmography*: and to all trauailers aſwell by lande as Sea, for the diſcouerie of ſtraunge Places, Ylandes or Countries: to all ſtudents of *Aſtronomy*, and to all thoſe that are deſirous to augment their skill and knowledge by the helpe of the Longitude, and to all others, well willours of Arte and fauourers of learning. *Simon Forman* ſtudent in Aſtronomy and Phiſique, ſendeth greeting in our Lord God euerlaſting.

1591.

The groundes of the Longitude, with an *Admonition to all those that are incredulous and beleeue not the trueth of the same.*

FOrasmuch as there hath beene diuerse Bookes written heretofore, by diuerse and sundrie learned men of the arte of Nauigation and Cosmografical science, the inuention & helpe of the Compasse: the making and vse of the Astralabie, the practise of the Crosse staffe, and Ballestile, and diuers other instruments aswell profitable as necessarie for those that vse and practise the arte of Nauigation, sometimes to take the height of the Sunne, sometimes to take the height, Longitude and Latitude of the Starres, to know the height of countries, and the Latitude of places, Ilandes, and cities from the Equinoctiall, that thereby they may the better know in what place they bee, and howe and whether to direct their voiage and their ship, that thereby they may also attaine more speedily and safely to the expected and wished place, and come to the hauen they long for. And in asmuch as the good Mariner wanteth yet one thing as one of the chiefe pillers of his Arte, that is, some meane, or waie to finde aswell the Longitude which they most desire, as the Latitude which they perfectly haue: the which Longitude many men haue shot at, and none vnto this daie could perfectly find by any instrument, or by any other reason then *Ptolomy* setteth downe, which is by the Ecclipses of the Sunne and Moone, which Mariners and trauailers cannot haue at all times to helpe themselues after they are beaten and driuen with foule weather, or with some vncoth storme or raging Sea vnexpected, or else being in some straunge countrie or place, to know whether they are gone so farre as they would bee, where they suppose some vnknowen Ilande or lande lieth: or where they are short of the same, which is not to bee done by any of the instruments or meanes aforesaide. But by a more secreete meane and way as yet vnknowen vnto all the world, except to those to whom my selfe here before haue

ſhewed it vpon the requeſt of ſome which were very incredulous thereof, and yet remaine becauſe themſelues as yet do not know the waie of dooing it: becauſe they that doe know it are ſworne by a ſacred othe not to manifeſt or teach the ſame to any without leaue before had of the Author.

And now becauſe I knowe on the one ſide that men are as deſirous of the knowledge hereof as my ſelfe haue beene ſometimes of greater matters. And on the other ſide, they will ſtill remaine incredulous of the trueth vntill they heare ſome reaſon for it, or ſee the experience thereof: as *S. Thomas* did of the reſurrection of Chriſt: which afterwarde ſaid vnto him, come hether *Thomas* and ſee the printe of the nayles in my handes, and thruſt thy hande into my ſide, and be not faithleſſe but beleiue: So doe I ſay vnto all that be incredulous, and to thoſe that thorough endleſſe trauaile, and hardineſſe of heart and fooliſh perſuaſions are perſwaded, that there is no true way or means to finde and know the true Longitude of Countries, Citties, and places, and to all thoſe curious carpers, whoſe wittes are intangled in vanitie, that are euer ſearching and neuer finde, reatching vp vnto the ſtarres, & yet cannot attaine to the orbe of the Moone, who thinkes none like vnto themſelues, and becauſe they cannot themſelues comprehend the myſterie of hidden and vnknowen things, none elſe ſhould doe it nor aſſay it. As who ſhould ſay, that the omnipotent God, the great Creator of all thinges, the giuer of all wiſdome and knowledge were tied vnto them, that they ſhould haue the preferment in things before others, or that he ſhould beſtow his guiftes according to their direction, and not according to his owne will: But as he made not all things at one time: ſo he ordeyned the knowledge of all things not to be found at one time, nor by one man: for if one man could doe euery thing, and that his witte were ſo apte and prompt that he could finde out the knowledge of euery thing, what neede had we then to ſeeke diuers men for diuers cauſes, as Carpentars to build houſes, Smiths to make yron worke, Coblers to mende ſhooes, &c.

Therefore, ſeeing that the great creator of all thinges diſpoſeth his giftes of knowledge to euery man according to his will and the meaſure of faith, as ſaith *S. Paul*, and maketh veſſels for honor and veſſels for diſhonor, ſome for the chamber, & ſome for the kitching, and maketh ſome poore, and ſome rich, and ſome wiſe, and ſome fooliſh: and putteth downe the mightie, and ſetteth vp the humble and meeke: making the fooliſh to confound the wiſe: and giueth to one man the knowledge of one thing, and to another the knowledge of another thing: to ſome the gifte of prophecie, to ſome the gift of healing, to ſome of doing of wonders and miracle, to ſome the interpretation of thinges, and finding of hidden miſteries, yet al is the adminiſtration of one ſpirit, and power of the holy Ghoſt, as *S. Paul* ſaith, of his free grace powred out vpon euery creature, according to his diuine will and foreknowledge.

And if it be ſo, why maruell you ſo at me, that I ſhould receiue ſo bountifull a gifte at the hande of God, or by him to be indued with the knowledge hereof. Am I a monſter degenerated from kind, or am I not a creature, made and formed by his diuine wil, and borne into the world, and do liue to ſhewe forth and ſpeake of his glorie and power as well as others.

Do not all the creatures of God manifeſt his power and glory, each one in his kinde and nature, as the birdes of the ayre the fiſhes of the Seas, the beaſts and wormes that feede on the ground, and the hearbes and trees that grow therof, doth not Rubarbe purge coller, and is not Selledony good for the eies, is there not fire in a flint ſtone, and doth not the *Salamander* liue in the fier: did not *Mercurie Triſtnegiſtus*, find the Tables wherin was ingrauen the 7. liberal Sciences, & other ſecreet Artes in the valley of *Hebron* after the floud: and talked he not with the holy Ghoſt, as it is recorded in his booke Intituled by the name of *Pymander*. Was not *Salomon* endued by God with ſuch excellent wiſedome, as none

had greater before his time. Did not God ſhewe his wonders by his ſeruant *Moyſes* in the land of Egipt, and did not *Moyſes* and the children of Iſraell paſſe through the red Sea: and was not *Pharao* and his hoſtes drowned. Did not *Ioſua* commande the Sunne to ſtand ſtill on *Gybeon*, & the Moone on *Aalon*, vntill he was auenged on the enimies of the Lord and of Iſrael. Did he not giue power vnto *Elias* to ſhut the heauens, ſo that it rained not in 3. yeeres and ſixe moneths. And then he prayed againe, and it did rayne.

I ſpeake now of the power of the Lord & of his wonders done in the old world: which alſo ceaſeth not to ſhew wonders vnto this day, and to giue power to ſome to beare his name before the reſt.

Maruaile not therefore at me, that I ſhould finde out the knowledge hereof, neither think it a thing impoſsible to be done, for it is not I, but the grace of God which is in me, as *Paul* ſaith, for all good giftes and the true knowledge of things commeth from God, according as it is written: *And in the latter daies I will powre out my ſpirite vpon all fleſh, and your yoong men ſhall dreame dreames, and your old men ſhall ſee viſions, and your children ſhall tell of things to come.* And therefore all though the Lorde did hide the knowledge hereof from all the learned men that euer haue written vnto this day, as from *Ptolomeus, Pithagoras, Plato, Beed, Ariſtotle, Alkindus, Lergis, Aomar, Albenoyt Zael, Guido bonatus, Haly, Iohn de ſacroboſco, Alfonſius, Amoaz, Dorotheus, Frier Bacon, Petrus de Medina, Purbaicus, Regiomontanus, Alfraganus, Strabo, Stadius, Leonitius*, and an infinite number moe of great and learned clearkes which haue written, aſwell of Aſtronomie as Coſmographie, it was not for want of wiſedome or learning in them, or great diligence to ſearch the ſecreete miſterie of things: neither was it for that there ſhould be borne into the world a greater clarke then they to finde it. But it was decreed ſo by his diuine powre before that when the time thereof was come, it ſhould be found by him whom he would

would to shewe his glory and powre euen by the simple and least made account of, to confound the wisdome of the wise and mightie. Euen by him that neuer thought of such a thing, nor neuer had indeuoured himselfe there abouts, nor applied any parte of his studie to that intent, had not *Maister Robert Parker marchant of London*, putting the same into his head, and intreated me to take some paines therein, at whose earnest request I bestowed some part of my studie & endeuour therein. And by the grace and helpe of God haue brought it to that passe, which any man that is desirous of the knowledge thereof, may learne the trueth thereof at the Authors handes if he repayre vnto him, or else if he or they repaire to *Master Robart Parkes* in pudding lane.

Therefore returning to our former discourse, againe to speake of the vnbeleeuing sorte, and those that stand so stiffly vpon impossibilities, saying it is impossible to finde any true and direct way for the knowledge thereof, because so many learned men aforesaid could neuer finde it: and some againe make it impossible, because themselues haue trauailed therin with much studie, counting themselues great and cunning Clarkes, hauing found and prooued twentie waies at the least, and could not happen on the right way as themselues haue reported. And thereupon some haue beene about to write a booke against it; and of the impossibilitie and vncertaintie thereof: some againe are of another mind, and they say if he haue found out the true way thereof, hee neuer founde it by God, but by some sinister meanes by the Diuell, as who should saie that the cunning of the diuell, is greater then the knowledge and power of God, or that God was not able to giue the knowledge thereof, except the diuell will, or that he be made pryuie thereof, or that the diuell can do any thing without the permission or sufferance or commaundement of God. If you doubt thereof goe aske of *Iob*, and of the booke of the Kings: how the diuell came before

before God, &c. and how God gaue him leaue and powre, and how God made the diuell and inſtrument to do his will. But theſe and ſuch like are not euill ſpeakers, but impairers of the powre of God, diſhonorers of his perſone, preſumptuous in their owne conceipt, enuiors of others, hinderers of the benefite of the common-wealth, negligent to do good, and as hard of beleefe as *S. Thomas* was.

Therefore I ſay vnto them as Chriſt ſaid vnto *S. Thomas*, Come hether all you vnbeleeuers, all you that ſeeke and neuer find, all you cunning Sophiſters, all you ſtudentes of Aſtronomie & Coſmographie, all you alſo that account things impoſsible, and all you that will write Bookes againſt it and all you that haue ſo many waies and none true, and you alſo that ſeeke by ſubtiltie of Arguments to enter into the ſecreet knowledge thereof, that thereby you might take away another mans glorie: that ſeeke I ſay to haue the gaine and prayſe of another mans trauaile. Come hether alſo all you that ſtand vpon the iudgement of the learned: and all you alſo that are deſirous to learne and to augment your knowledge. Come hether alſo you Maſters and Sailers, that entend any long voyages, here ſhall you finde one of the chiefe pillers of your Arte, here ſhall you find a Pilate to direct you in a dangerous paſſage, being driuen with a ſtorme be it neuer ſo long, here ſhall you finde a Load ſtarre, that ſhall ſhewe you where you ſhall goe forth or backe, Eaſt or Weſt. Yea you ſhall finde ſuch a practiſe and knowledge that ſhall proue, or diſproue all your Maps, Cardes, Globes, and Bookes that here before haue beene written thereof, and further it reſolueth and diſcouereth all the doubts here before had in Nauigation.

And the trueth and certaintie hereof is ſo ſure, as the Latitude, and as eaſie to be done to euery wiſe man.

And for becauſe you ſhall not thinke that I make a great preambulation or circumſtanticall diſcourſe therof, to perſwade men without ſome ground or reaſon, I will here ſet

downe

downe certaine groundes and pillers thereof, the which if any can absolutely disproue, then may he well say that it is a fallible rule and not true: the which I knowe none can disproue except he will denie both reason and learning. And the groundes are these, *viz.*

1 *God in the beginning created all thinges in number, waight and measure, in order, place, and forme, and appointed man to haue dominion ouer his creatures, and to search and seeke out the secreet and hidden vertues in them conteyned, giuen vnto them by by God their creator, seuerally, by measure, &c.* Genesis.

2 *God created two lights, a greater light to rule the daie, as the Sunne, and a lesse to rule the night, as the Moone and the Starres.* Genesis.

3 *God placed the Starres in the firmament of Heauen, to giue light vpon the Earth.* Genesis.

4 *The first mouer doth giue a turne once euery 24. howers or there abouts, about the Earth, whereby the Sunne, the Moone, and Starres, are carried from the East vnto the West, and so about.* Ptolomie. Aristotle. Thom. de sacrob.

5 *The Earth is quiet and vnmoueable, and is accounted the Center of the worlde.* * Ptolomie in Almegesto. Arist. in 2. met. Thom. de sacrob.

6 *Doe not the Earth and the Waters make one rounde bodie.* Thom. de sacrob.

7 *There are two poles, the Arcticke and Antarcticke, the one in the North, the other in the South, and the Line Equinoctiall in the middest.* Ptolomie. Aristotle. Alphonsus.

8 *There is a Latitude, which is taken from the Equinoctiall to the Poales, either to the South or the North.*

9 *There is no Latitude without his Longitude.*

10 *The Latitude is opposite to the Longitude, in respect that the Latitude is taken from the South to the North. And the Longitude from the West vnto the East.* Ptolomie.

11 *The Sunne doth rise and fall in his course, and neuer continue at one staie.*

12 *It is* Omne oppoſitum.

13 *There is fire in a flint-ſtone.*

14 *Diuers places haue diuers Latitudes in reſpect of the South and North. And diuers Longitudes in reſpect of East and Weaſt.*

15 *A man may ſee farther on a plaine ground, or on a hill, then he can among trees or in a bottome, and as farre by Sea as by Lande.*

Too Groundes more I haue left out, becauſe as they are moſt true, ſo they giue too plain euidence, and too much vnderſtanding to a ſubtill witte.

Now if any can diſproue abſolutely theſe grounds aforeſayd *viz.* That God in the beginning, did not create all thinges as is aforeſaid, and ſet the Sunne, the Moone, and Starres to diſtinguiſh times and ſeaſons, or that the Sunne, the Moone and Starres doe not giue light vnto the earth, or that the firſt mooued doeth not turne, or can gaine ſay the ſtabilitie of the earth, the ſcituation of the Pole ſtarres, or Equinoctiall line, or can denie the Latitude, or ſay there is a Latitude without Longitude, or that can ſay they are not oppoſite, or that it is not *Omne oppoſitum, &c.* or that there is no fire in a flint-ſtone, or that all places haue one Latitude and Longitude, &c. or that a man can ſee farther generally in a bottome, then on a high hill, &c. Then in diſprouing abſolutely theſe generally, then hee may generally diſproue our Arte, and finding of our Longitude, and ſo manie of theſe poſiſions as hee can abſolutely diſproue, ſo many of the pillers of our Arte doth fayle, for theſe poſitions which I haue here ſet downe, eyther they are the opinions of the Auncient writers, or confirmed by holy Scripture, or are ſuch as daylie experience doth confirme or reaſon wholy allowe.

But if theſe may not be diſproued generally and abſolutely without caueling: then it is but a folly for any to ſtande

ſtande incontention or deniall hereof, for whoſoeuer ſhall denie it by wordes, the experience and deed ſhal ſhewe it to be true.

Ceaſe therefore, all ſuch as carpe againſt the trueth: and you alſo that wonder at the power and giftes of God, and you alſo that ſay you haue ſo many waies, and you alſo that will write Bookes againſt the trueth hereof, ceaſe alſo you that ſay it was found by ſome ſiniſter meanes: ceaſe alſo you that ſtumble at a ſtrawe and fall ouer a houſe, and you alſo that be like vnto *S. Thomas* in vnbeleeuing, and know you that whatſoeuer is not poſsible with man, is poſsible with God: and God will reueale the knowledge of hidden things at times appointed to thoſe whom it pleaſe him to the great admiration of the worlde: and there is nothing ſo ſecreete among men, but it ſhall be made manifeſt.

Tell me, was the knowledge of all Artes and Sciences found out in one day, was Roome builte in a day, or ſtately Troy ouerthrowne in an houre, hath not God meaſured the heauens, and wayed the earth in the ballance, hath hee not ſounded the deapth of the ſea: and numbred the haires of our heads, gaue he not boldnes and eloquence of ſpeach to *Moſes & Aron*, gaue he not wiſdom to *Salomon*, faithfulneſſe to *Abraham*, to his twelue Apoſtles knowledge of tongues, and powre to caſt out Diuels, and gaue hee not to his Prophetes, Martirs, Virgins, and Confeſſers conſtancie: is not he the onely well and fountaine of all goodneſſe and grace, from whom all knowledge ſprings.

Did not one, finde out the Latitude, another the height of the Sunne, another the Aſtralabie, another the Compaſſe, another the Croſſe ſtaffe, another the Balleſtille, all was not found at one time, nor by one man. Did not another finde the Arte of making of Glaſſes another the making of Guns, and gunne powder, another the Arte of Printing, others the making of globes Celeſtial & Terreſtrial, & innumerable other things very needfull and neceſſary which are now vſed.

I demaund alſo whether all Countries, Prouinces, and Ilandes ſcituated in the ſeas, were found all at one time or by one man, was not the *Canarie Ilands* found by a French man called *Betanchor*, in the yeare of our Lord God 1405. *viz.* *Lanſelotus*, and the Iland *Fortis ventura*. And after this did not *Farnandus Peraria* inuade the Ilandes *Ferrea*, and *Gomera*. And did not *Petrus de Vera*, citizen of the noble cittie of *Xeuicium*, and *Michael* of *Moxica* ſubdue the Ilands *Grancanaria*, and *Palma*. And *Alphonſus Lugo* that which is now called *Teneryfen*, of latter daies. And further was not *Hiſpaniola* and *Cuba* diſcouered by *Colonus*, & diuers other Ilands, in the yeare of Chriſt 1493. and 1494. And did not *Iohn Dias Solis* ſayle firſt into the riuer of Plate in the daies of *Ferdinandus* king of Spaine, &c. What need I ſpeake of *China*, of *Giapan*, of *Perſia*, of *Ginnea*, and of diuers other places late founde out, by running as it were at aduenture: If theſe countries and Ilandes were found as is ſaid by great aduenture, there is no doubt now, but many notable trauailers hauing the helpe of ſo good and profitable a rule as the Longitude, will attempt to ſayle and diſcouer yet diuers Ilands and Countries vnknowen to their perpetuall memorie and euerlaſting prayſe.

Now therfore, you that are men among men, and would be accounted wiſe on the one ſide: and that deſire to be inſtructed in greater knowledge on the other ſide, conſider with your ſelues, what God is, what his power conteyneth: what his giftes are, what his will is. Conſider alſo what time bringeth to light, what Arte and cunning skill is: and to what induſtrie and trauaile attaineth: Lay all maliciouſnes aparte, and enuie nor infame none, nor condemne them that trauaile in any Arte or Science for his countries wealth, purſue them not with euill wordes that ſeeke to doo you good, and to encreaſe, both your wealth and knowledge. Be not vnthankefull to God for his giftes: for whatſoeuer is done to good, it is the will of God either to ſuffer it or

commaund it: euill is well done, where good commeth thereof to a multitude, and where God is glorified by it, praiſe God highly, that it hath pleaſed him, to giue the knowledge hereof to your Countriman, who meaneth to make you partakers of it, his paynes conſidered. For I dare to ſay if the knowledge hereof had beene founde by the Spaniardes or by any other Nation, he ſhould be ſo well rewarded in his Countrey for his paines, and ſo highly honoured for the knowledge hereof: that hee ſhould haue no neede to ſeeke any forraine Prince or Countrie for recompence, neyther ſhould any other nation bee made priuie thereof they would keepe it ſo ſecreete. Conſider hereof all you that ſhall reade this my writing, for herein is a miſterie: and if rewarde be giuen accordingly: I ſhall hereafter perhaps make declaration, of the principles of another ſcience, as much deſired as this, of ſome other ſortes of men, who labour continually for the knowledge thereof, and wander in darkeneſſe, in a thing more myſticall and of greater importaunce then this which I haue ſpoken of, and is thought as impoſsible too, as euer this was, but yet not ſo impoſsible, becauſe of ſome it hath beene done in the olde worlde, and ſo was neuer this. And as there hath beene heretofore diuers proffers made in the abſence and behalfe of the Author, by Maiſter *Emery Mullenеux* & others, for the trueth and triall hereof and hath not beene accepted hetherto: becauſe ſome haue thought it eyther to be doone vpon preſumption, or on a Brauado, &c. But whatſoeuer they before haue offered in the premiſes, I the Author hereof am ready at all times to performe the ſame God willing.

Furthermore, if it pleaſe God I liue in peace, and be once able to maintaine my ſtudie without let and interruption: I will God willing rectifie the heauens for the true places of the fixed Starres, according to the Signe, Degrees and Minutes, that they now ſtande in, vpon experience and iuſte obſeruation, and not vpon ſuppoſition & calculation after

other mens Tables, for we do see, that all the Tables for the most parte, late set out of the fixed starres bee false and very erronious, and do differ among themselues very much, yea it seemeth, that our Ephimerides is false also in many places, as touching the mouing of the Planets, in some, a degree to much, in some, too degrees and more too little, and also the very motion of the Moone is not direct, which if it bee not farther looked into and amended, will cause great errour in time. Manie other things I haue to say, which now I omitte, but hereafter I will write hereof more largely by proofe of the present time, and not vpon supposition. In the meane time I leaue the vewe hereof and consideration to your discretion, giuing prayse to God that gaue vs the vnderstanding and knowledge hereof, to whom be prayse for euermore. *Amen.*

THe Tables hereto belonging shall follow, and be Printed shortly, with certaine other Bookes of Astronomie and Astrologie, as the Booke of the three sortes of houres, Naturall, Artificiall and Magicall, with all the doubtes of Astronomie, and alterations and significations of the Planets, the moouing of the eight Sphere, and the way to erect a figure both by the Eccliptike line, as also by the oblique ascention, wherein the misterie of Arte lieth hid, with diuers other Bookes God willing if they may be permitted.

Finis. *Per me* Simon Forman.

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